Cranes flying northward.—Guttenberg, Iowa, 27th, Independence, Kansas, 31st; Yates Centre, Kansas, 26th; West Leavenworth, Kansas, 17th, 21st; Liberty Hill, Louisiana, 21st; Wickenburg, Arizona, 15th.

Cranes flying southward.—Yates Centre, Kansas, 25th.

METEORS.

Grand Rapids, Kent county, Michigan: at about 3 a. m. of the 15th, a very brilliant meteorite was observed to pass over the city in a direction southeast by south. It remained in view several seconds, disappearing on the southeastern horizon. The nucleus was in appearance about half the size of a full moon, and resembled in brilliancy an electric light. It was followed by a small tail of a bright red color. Though the moon was shining brightly at the time of the meteor's appearance, it formed a brilliant spectacle. Reports from Kalamazoo are to the effect that a meteor, which was probably the same as the above, was seen at about the same hour, and that it exploded with a loud report some forty miles beyond that village.

Webster, Day county, Dakota: at 7.35 p. m. of the 16th a meteor, apparently the size of "Jupiter," exploded in the northeastern sky at an altitude of about 30°.

Meteors were also observed at the following places:

1st.—Albany, Oregon.
13th.—Crete, Nebraska.
19th and 20th.—Lead Hill, Arkansas.
25th.—Liberty Hill, Louisiana.
27th.—Woodstock, Maryland.
28th.—Lead Hill, Arkansas.
31st.—Rowe, Massachusetts.

SNOW SLIDES.

Salt Lake City, Utah: a snow slide occurred at Alta, (about twenty miles southeast of this city,) on the 7th, resulting in the death of twelve persons.

Denver, Colorado: at 6 p. m., of the 10th, a snow slide descended upon Woodstock, Gunnison county, carrying away every building in that village. Seventeen persons were reported to have been buried under the snow. The snowfall in mountain districts of Colorado during the past winter is reported to have been unprecedented. Many mining camps in the southern and western parts of the state have been snowbound since November. The towns of Durango, Silvester and Rico were still blockaded on the 10th, no trains having reached those points for several weeks. Great suffering has been experienced at Breckenridge and Montezuma, in Summit county. In the ravines and gulches of Gunnison county the snow was from fifty to one hundred feet deep.

A snow slide occurred on the Aspen mountain, Colorado, during the night of the 10th–11th, by which three employés of the Vallejo mine were killed.

POLAR BANDS.

Lead Hill, Arkansas, 11th.
Los Angeles, California, 7th.
Washington, District of Columbia, 22d.
Archer, Florida, 4th, 6th, 14th, 31st.
Riley, Illinois, 10th, 16th.
Yates Centre, Kansas, 4th, 30th.
Escanaba, Michigan, 25th
Fort Assinaboine, Montana, 10th.
Clear Creek, Nebraska, 11th, 15th.
Mountainville, New York, 28th.
Charleston, South Carolina, 11th.
Stateburg, South Carolina, 22d.
Rio Grande City, Texas, 4th.
Wytheville, Virginia, 12th, 16th, 23d.
Milwaukee, Wisconsin, 5th.

PRAIRIE AND FOREST FIRES.

Fort Smith, Arkansas, 3d, 27th, 28th.
Yankton, Dakota, 23d, 25th, 26th, 30th.
Humboldt, Iowa, 29th, 30th.
Independence, Kansas, 1st to 5th, 8th, 11th, 15th, 17th to 29th.
Dodge City, Kansas, 9th, 10th, 14th.
Clear Creek, Nebraska, 26th.
Red Willow, Nebraska, 11th.
North Platte, Nebraska, 19th, 30th.
Fort Craig, New Mexico, 28th.
Fort Stockton, Texas, 10th.

DROUGHT.

Indianola, Texas: on the 1st, farmers from the surrounding counties reported that crops were suffering from the effects of drought.

Rio Grande City, Texas: a severe drought prevailed in this section during the month. On the 17th, stock growers in localities northeastward, reported that the crops were suffering in consequence of drought, and that cattle were dying on account of poor pasturage.

ZODIACAL LIGHT.

Prescott, Arizona, 25th.
Webster, Dakota, 1st, 12th, 13th, 15th to 18th, 24th, 26th.
Pensacola, Florida, 19th.
Escanaba, Michigan, 1st, 7th, 13th, 17th, 18th, 26th, 27th.
Variety Mills, Virginia, 8th, 15th, 16th, 20th, 24th, 26th, 27th.

SAND STORMS.

Yuma, Arizona, 10th, 23d.
San Carlos, Arizona, 10th.
West Las Animas, Colorado, 10th.
Fort Union, New Mexico, 4th, 5th.
Fort Stanton, New Mexico, 10th.
Fort Stockton, Texas, 24th.

ERRATUM.

In the January REVIEW, on page 24, first column, third line from the bottom, under MIRAGE, should read 7 a. m., instead of 7 p. m.

NOTES AND EXTRACTS.

The following extract has been taken from the report of the Ohio Meteorological Bureau for March, 1884, under direction of Professor T. C. Mendenhall:

The mean atmospheric pressure for March was in close agreement with that for the same month of last year, being only seven thousandths of inch greater. The maximum pressure was greater by one-tenth of an inch than that for March, 1883; the minimum was also less, and the range almost exactly the same.

In temperature, the month was more nearly normal than in 1883. During March of last year the range of temperature was great, reaching as low a point as 17°.4 below zero at Wauseon on the 24th, while only two days before a maximum of 75° was recorded at Ironton. The highest temperature reached during the month, this year, was 74°.0, reported from both Logan and Ironton on the 29th and 30th. The lowest was 10°.5 below zero, reported from Sidney on the 4th.

The mean temperature for the month was 37°.5, against 32°.4 for March of last year, and this is still somewhat below the normal temperature for the month, which, from the best information at hand is 38°.2. Compared with last year the mean daily range was nearly two degrees less, and the maximum daily range about 15° less.

The mean precipitation for the month was considerably in excess of that of last year, but not differing very greatly from what may be regarded as the normal amount for March. Quaker City, which reported the maximum rainfall (3.61 inches) in March, 1883, furnishes the maximum for March, 1884, the amount being 6.05 inches. The mean rainfall over the state since the beginning of the current "meteorological year" (beginning November 1, 1883) has been 19.21 inches, which is almost exactly one inch greater than for the same period of last year.

STATE SUMMARY OF REPORTS FOR MARCH.

Mean barometer, 30.067 inches.
Highest barometer, 30.518 inches on the 30th, at Wapakoneta.
Lowest barometer, 29.348 inches on the 26th, at Wauseon.
Range of barometer, 1.170 inches.
Mean relative humidity, 79.3 per cent.
Mean temperature, 37°.5.
Highest temperature, 74°.0 on the 29th and 30th, at Logan and Ironton.
Lowest temperature, —10°.5 on the 4th, at Sidney.
Range of temperature, 84°.5.
Mean daily range of temperature, 17°.6.

Greatest daily range of temperature, 40°.0 on the 22d, at Westerville.
Least daily range of temperature, 1°.5 on the 12th, at Granville.
Number of clear days, 5.1.
Number of fair days, 9.1.
Number of cloudy days, 16.8.
Number of days on which rain fell, 16.1.
Mean rainfall, 3.51 inches.
Mean daily rainfall, .106 inch.
Greatest rainfall, 6.05 inches at Quaker City.
Least rainfall, 1.87 inches at Cleveland.
Prevailing direction of the wind, southwest.

WEATHER REPORT FOR MARCH, 1884.

Prepared by Prof. F. H. SNOW, of University of Kansas, from observations taken at Lawrence.

The temperature, wind-velocity, and humidity of this month departed but slightly from the March averages; the rainfall was twenty-five per cent. greater than usual, and the cloudiness was somewhat in excess. Maple blossoms (*Acer dasycarpum*) were first observed on the 10th, elm blossoms on the 17th, and dog-tooth violets on the 23d.

Mean temperature.—41°.56, which is 0°.23 below the March average. The highest temperature was 73°, on the 30th; the lowest was 12°, on the 1st, giving a range of 61°. Mean temperature at 7 a. m., 34°.39; at 2 p. m., 49°.86; at 9 p. m., 41°.

Rainfall.—2.73 inches, which is 0.55 inch above the March average. Either rain or snow fell on nine days. The entire depth of snow was one inch. There were five thunder showers. The total rainfall for the three months of 1884 now completed has been 5.14 inches, which is 0.43 inch above the average for the same months in the preceding seventeen years.

Mean cloudiness.—58.87 per cent. of the sky, the month being 8.52 per cent. cloudier than usual. Number of clear days (less than one-third cloudy) 10; half-clear (from one to two-thirds cloudy) 7; cloudy (more than two-thirds) 14. There were two entirely clear days and six entirely cloudy. Mean cloudiness at 7 a. m., 59.60 per cent.; at 2 p. m., 57 per cent.; at 9 p. m., 60 per cent.

Wind.—The total run of the wind was 14,229 miles, which is 389 miles below the March average. This gives a mean daily velocity of 459 miles, and a mean hourly velocity of 19.12 miles. The highest velocity was 52 miles an hour on the 27th.

Barometer.—Mean for the month, 29.054, inches; at 7 a. m., 29.069 inches; at 2 p. m., 29.031 inches; at 9 p. m., 29.061 inches; maximum, 29.465 inches on the 14th; minimum, 28.451 inches on the 27th; monthly range, 1.014 inches.

Relative humidity.—Mean for the month, 65; at 7 a. m., 76.2; at 2 p. m., 44.5; at 9 p. m., 74.4; greatest, 100. on the 20th; least, 15. on the 12th. There were two fogs.

The following table furnishes a comparison with the month of March, in the 17 preceding years.

March.	Mean temperature.	Maximum temperature.	Minimum temperature.	Winter days.	Rain (inches).	Snow (inches).	Rainy days.	Thunder-storms.	Mean cloudiness.	Humidity.	Number of fogs.	Miles of wind.	Mean barometer.	Maximum barometer.	Minimum barometer.
	°	°	°												
1868	50.91	93.0	22.0	1	3.46	0.00	4	0	51.18	.....	0	.....	.....	.....	.....
1869	35.07	81.0	— 1.0	9	1.15	1.00	4	0	52.81	75.4	3	.....	29.146	29.684	28.507
1870	37.69	71.0	1.0	8	1.86	0.00	7	3	56.13	64.9	0	.....	29.063	29.510	28.397
1871	47.42	78.0	25.5	0	1.73	4.00	6	3	52.00	60.4	0	.....	28.943	29.307	28.404
1872	37.23	72.0	18.0	9	2.92	3.50	6	4	55.06	63.8	0	.....	29.124	29.731	28.423
1873	42.81	74.0	4.0	5	1.34	2.00	5	1	41.93	52.8	0	18,147	29.118	29.655	28.620
1874	39.50	69.5	19.0	4	2.30	4.00	7	1	62.27	67.1	1	13,419	29.123	29.678	28.493
1875	37.10	82.0	9.5	13	2.61	1.00	7	1	44.84	64.9	0	15,023	29.051	29.471	28.530
1876	34.25	66.0	0.0	11	4.51	17.00	11	0	60.45	69.4	1	15,690	29.066	29.633	28.586
1877	40.03	81.0	7.0	6	3.40	5.00	7	2	54.09	67.2	1	13,981	29.108	29.537	28.558
1878	50.90	81.0	27.0	0	2.67	0.00	8	5	40.36	67.6	0	11,994	29.005	29.372	28.519
1879	48.22	87.0	11.0	7	0.37	0.00	5	0	46.02	56.1	0	13,787	29.165	29.662	28.760
1880	42.38	79.0	2.5	6	2.03	3.00	5	2	44.94	63.4	1	13,841	29.133	29.591	28.478
1881	37.47	77.0	14.0	6	1.66	8.00	7	1	45.79	70.3	0	16,231	29.043	29.460	28.305
1882	46.90	79.0	17.0	3	1.62	9.00	5	1	40.22	64.9	0	16,608	29.126	29.676	28.349
1883	40.90	69.0	16.0	3	1.28	0.00	7	1	48.92	65.6	0	12,080	29.164	29.774	28.630
1884	41.56	73.0	12.0	7	2.73	1.00	9	5	58.87	65.0	2	14,229	29.054	29.465	28.451
Mean	41.78	77.2	12.0	6	2.21	3.44	7	2	50.35	64.9	0.5	14,586	29.090	29.575	28.500

In the column of minimum temperatures a dash indicates temperature below zero.

REPORT OF THE MISSOURI WEATHER SERVICE, MARCH, 1884.

The mean temperature of the past month was, at the central station, 41°.8, which is 1°.6 below the normal mean temperature for March. There have been four instances during the past forty-seven years when the mean temperature was as low or lower than that of the past month.

The month taken throughout the state has been generally stormy and cloudy, there being many days when the sun was not seen—one station records twenty-eight cloudy days out of the thirty-one. Entering, as was recorded by almost all the observers, with a storm, snow in some parts, it continued with but little intermission to be stormy and inclined to cloudiness, with light precipitation, throughout the month.

The lowest temperatures, without any exception, were observed on the third of the month, the lowest being observed at Kirksville—3° below zero. This low temperature coincides with lowest daily mean of the month as shown by Dr. Engleman's series. Another cold wave was also generally observed on the 8th.

The higher maximum temperatures were during the latter decade of the month, high temperatures being also observed on the 11th and 12th.

The precipitation at the central station was somewhat below the normal amount, it being 3.63 inches, or 0.74 less than the normal for Saint Louis. The amount was comparatively small considering the number of days—eleven at Saint Louis.

No snow was seen after the first decade of the month.

Hail was observed on the 7th and 25th at the central station, on the 7th and 27th at Greenfield, on the 11th at Ironton, and on the 24th at Miami.

The wheat crop is generally reported as doing well. The light but continued precipitation has somewhat retarded the sowing of the early crops, the ground being too damp for plowing.

FRANCIS E. NIPHER, *Director.*

Washington University, April 9, 1884.

The following meteorological summary for March, 1884, has been forwarded by Hon. A. J. McWhirter, director of the Tennessee Weather Service:

SUMMARY OF WEATHER REPORT FOR MARCH, 1884, PREPARED BY THE BUREAU OF AGRICULTURE.

Mean temperature, 49°.
Highest temperature, 80°, on the 22d at Tennessee University, Knoxville, and on the 28th at Flippin, Lauderdale county.
Lowest temperature, 10°, on the 2d, at Andersonville.
Range of temperature, 70°.
Greatest daily range of temperature, 40°, on the 21st, at Hohenwald.
Least daily range of temperature, 0°, on the 9th, at Riddleton; on the 13th, at Smithville; and on the 25th, at Ashwood; and 1°, on the 13th, at Chuckaluck, Manchester, Andersonville, and Grief.
Mean depth of rainfall, 7.90 inches.
Mean daily rainfall, .255 inch.
Greatest depth of rainfall, 14.90 inches, at Smithville.
Least depth of rainfall, 3.17 inches, at Sailor's Rest.
Average number of clear days, 7.
Average number of fair days, 8.
Average number of cloudy days, 16.
Average number of days on which rain or snow fell, 11.2.
Mean depth of snow fall, 2.24 inches.
Prevailing direction of wind, north.

The days on which the greatest rainfall occurred were the 5th, 6th, 7th, 11th, 12th, 18th, 22d, and 25th. The greatest daily rainfall occurred on the 5th, the average for the state being 1.80 inches. The greatest at any one station was 3.50 inches, reported on the 5th, at Fostoria and Kingston Springs. The heaviest fall occurred on the 25th at Kingston Springs, being 1.67 inches in thirty minutes.

Mr. W. H. Ragan, director of the "Indiana Weather Service," furnishes the following meteorological summary for March, 1884:

Districts.	Mean temperature.	Precipitation.
	°	*Inches.*
Mean for northern counties	37.4	3.03
Mean for central counties	37.7	2.46
Mean for southern counties	44.3	2.73
Mean for state	39.8	2.74

Mr. S. R. Thompson, director of the "Nebraska Weather Service," furnishes the following report:

NEBRASKA WEATHER SERVICE, BULLETIN FOR MARCH, 1884.

The month was usually warm, with an extraordinary amount of rain.

Rainfall.—The average by sections was as follows: southeast, 2.75 inches; northeast, 3.05 inches; southwest, 1.90 inches; northwest, 2.01 inches. Average for the entire state, 2.42 inches. The rainfall at Omaha has been equalled in March but twice in thirty years.

Temperature.—The mean temperature of the air was 35°.25. The average of all noon observations was 44°.30.

The following were some of the maximum and minimum temperatures: Omaha, maximum, 67°.0, minimum, —3°.0; North Platte, maximum, 65°.0, minimum, —1°: DeSoto, maximum, 68°, minimum, —4°; Agricultural College, maximum, 67°.0, minimum, 3°.0; Crete, maximum, 73° on 9th; minimum, —4°.6 on 9th; Peru, maximum, 70°, minimum, 1°.

Mean relative humidity.—Omaha, 73.3; North Platte, 75.5; DeSoto, 76.7; Agricultural College, 76.08 per cent.

Wind.—Number of miles travelled: Omaha, 5,819 miles; North Platte, 6,723 miles. Mean direction—Omaha, north; North Platte, northwest. Greatest velocity—Omaha, 24 miles per hour, southeast on 27th; North Platte, 38 miles, northeast.

Miscellaneous.- Thunder storms were observed at Superior on the 1st, 17th, 20th, 21st, 24th; at DeSoto on 1st, 8th, 6th, 9th, 12th, 27th, 30th, 31st; Beaver Creek on 10th, 27th, 30th, 31st; Genoa on 30th, 31st; Nebraska

City 4th, 9th; Red Willow on 15th, 27th, 30th, 31st; Ashland on 20th, 21st, 27th, 31st; Johnson on 17th, 20th; Stromsburg on 20th, 30th, 31st; Keene on 20th, 30th, 31st; Fairbury on 20th, 30th; Weeping Water on 22d, 27th; Hastings on 21st, 27th; Dawson on 27th, 30th, 31st; Pawnee City on 17th, 20th, 21st, 24th, 26th, 31st; Syracuse 21st.

Grain sowing began at Keene about the 10th. At the same place a bright lunar halo was observed on 12th.

Phœbe birds on 9th, robins on 10th, and red birds on 11th, heard singing at Péru.

Ice broke up in the Missouri at DeSoto on the 22d, and at Nebraska City on the 15th.

Blackbirds and ducks were seen at DeSoto on 13th, and robins and blue birds at Nebraska City on the 12th.

Ice broke up and was running in the Loup at Beaver Creek on the 13th. Meadow larks seen on 15th at same place.

George Sheed, at Ashland, reports robins on the 13th, larks on the 15th, blue birds on the 16th, blackbirds on the 18th, sand hill cranes on the 22d.

At Lincoln robins were observed on the 18th, and blue birds on the 20th. Also solar halo on the 3d, and lunar halo on the 18th.

Blue birds were seen at Crete on the 23d, robins at Table Rock on the 18th, and larks at Genoa on the 16th.

Seeding wheat began at Genoa on the 19th.

At Red Willow blackbirds were observed on the 14th, meadow larks on the 16th, and robins on the 23d.

The following extracts have been taken from the report of the "Alabama Weather Service" for the month of March, 1884, under direction of Professor P. H. Mell, jr.:

AGRICULTURAL AND MECHANICAL COLLEGE,
AUBURN, ALABAMA, *April* 1, 1884.

Meteorology has long since been demonstrated to be practical, and it is rapidly assuming a place of prominence among those sciences and arts that are pronounced by experience to be necessary for the successful prosecution of commercial, mechanical, and agricultural affairs. The rapid advancement of this science is in no little degree due to the excellent and valuable work performed by the Chief Signal Officer and his efficient corps of assistants. In order to bring the benefits of the system to the door of each person in the United States the Chief Signal Officer has considered it wise to advise the legislatures of the states to organize state weather services. The importance of these services is made evident from the fact that the causes which govern the circulation of the atmosphere are controlled by fixed laws, in most instances well understood; and if the territory under observation be extensive enough, with stations thickly scattered throughout its length and breadth, the conditions of the weather can be foretold with astonishing exactness twenty-four hours in advance. How important are these predictions to the farmer!—to know that he can safely expose his hay and grain to the beneficial rays of the sun so many hours without their being destroyed by rain.

By the rapid multiplication of stations through the instrumentality of these state services, the signal officer is furnished with data that will enable him not only to watch the progress of great storms, but also to keep under his eye all local changes and phenomena constantly taking place in the atmosphere throughout the Union.

* * * * * *

It is the intention to place this system on the same basis with those already in successful operation in Ohio, Kansas, Tennessee, Missouri, Indiana, Iowa, Illinois, and Nebraska; and at the meeting of the next legislature an appeal will be made to that body to recognize the importance of such work to the state of Alabama, and by proper enactment legalize the service as a state organization. In the meantime Judge E. C. Betts, our efficient Commissioner of Agriculture, has kindly consented to give me all the assistance in his power, and with this strong co-operation I can predict no other result than one of success for the Alabama weather service.

* * * * * *

March, in some respects, has been a remarkable month. Very heavy rainfalls are reported from all sections of the state. Creeks and rivers have been unusually full; there have been washouts and overflows in consequence, damaging railroads, etc. Farmers are very backward with their crops, many having their seed, fertilizers, etc., washed away; the first planting in many places almost a failure.

The maximum rainfall was reported from Clanton, 12.75 inches, and the records from all the observers indicate an unusual fall of rain. The average precipitation for the whole state is 9.35. There was only an average of six clear days, and an average of twelve thoroughly cloudy days. Rain fell on an average of eleven days. The days on which rains were general were the 4th, 7th, 8th, 12th, 13th, 18th, 19th, 22d, 23d, and 25th. The heaviest rains occurred on the 8th and 18th.

* * * * * *

Trinity, Tuscumbia, and Florence report slight snow on the 1st, 2d, and 4th. Florence notes hail on the 19th. The newspapers mention a very heavy hail storm at Jefferson and vicinity on the 25th, injuring a good deal of property.

The hottest days of the month generally were the 25th and 28th.

The coldest day was the 1st.

The average for the month was 59°.02.

The highest temperature was 83°.9, at Mobile on the 28th.

The lowest temperature was 22°.8, at Chattanooga, Tennessee, on the 1st.

The range of temperature was 61°.1.

* * * * * *

Several destructive tornadoes have been reported from different stations. A newspaper account locates one of these storms on the 11th, in Pickens and Greene counties, that blew down a number of houses and fences.

The Eufaula Bulletin describes another storm that swept through Barbour county at 2 a. m. on the 24th. It was accompanied by the usual electric display and torrents of rain. Its track was about one-quarter of a mile wide. Several persons were badly injured and one man reported killed, and a number of persons lost buildings, fences, and other property on their premises.

* * * * * *

On the 25th a tornado passed through northeast Alabama, continuing on into Georgia, doing great damage in its track to property.

About the same time the Enquirer-Sun, of Columbus, Georgia, describes another tornado that swept through Beat One, in Chambers county, five miles north of Fredonia. It destroyed everything in its path. No lives reported lost.

It is to be greatly regretted that the accounts of these storms are so meagre. It will be gratifying to me, and of great service to the system, if in future, papers published near tracks of tornadoes will send me copies of issues containing descriptions of these commotions of the atmosphere.

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